MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Mechanic**			**Module Delivery**	
Module Type	**Core**			☒ **Theory** ☒ **Lecture** ☒ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	UOMU031031				
ECTS Credits	**6**				
SWL (hr/sem)	**150**				
Module Level	1		**Semester of Delivery**	1	
Administering Department	Type Dept. Code		**College**	Type College Code	
Module Leader	Ali jaafer obaid		**e-mail**	Ali.jaafer.obaid@uomus.edu.iq	
Module Leader's Acad. Title	Ass. Professor		**Module Leader's Qualification**	Ph.D.	
Module Tutor	Name (if available)		**e-mail**	E-mail	
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date	10/06/2023		**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى			
Prerequisite module	None	**Semester**	

Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents أهداف المادة الدراسية ونتائج التعلم والمحتويات الإرشادية	
Module Objectives أهداف المادة الدراسية	1. The basic concepts of all the way to valid conclusion and discuss the fundamental concepts in classical mechanics (1) through a broad range of interesting application to the real world. 2. Clearly and logically discuss the scalar, vector, gradient, divergence, curl, application of operator, vector integration, and derivative of a vector. 3. Analyse coordinates systems (curvilinear, differential vector operator, Cartesian, spherical and cylindrical) in physics 4. General motion of the particles in the three dimensions. 5. Discuss the non-inertial reference systems. 6. Discuss the gravitation and central forces.
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	1- The first step in the development of the classical mechanics (I) was to examine the learning outcomes for the courses at the beginning of the semester. 2- The second step was to categorize the subject matter and identify the important concepts. These concepts were identified from the outlines of the physical laws, principles and the associated proofs. 3- The third step is to identify the misconceptions that students are likely to have about each of the concepts in the complete list. 4- The last step is highlighting the day life applications whenever exist and encourage the students to see more details in the international websites and reference books in the library, discussing some selected problems in each chapter, cooperate with a different institution to find how they deal with the subject.
Indicative Contents المحتويات الإرشادية	Newtonian Mechanics • Conservation of Energy & Momentum • Fluid Dynamics

Learning and Teaching Strategies استراتيجيات التعلم والتعليم	
Strategies	Teaching and learning strategies for this course will include: A minimum of 50 contact hours, typically to include interactive group teaching, cocurriculars, individual meetings, in-class presentations, lab-based experiments and exams. Course information and supplementary materials are available on the University's Virtual Learning Environment (VLE). Students will receive individualised developmental feedback on their work for this course. Students are required to attend and participate in all the formal and timetabled sessions for this course. Students are also expected to manage their directed learning and independent study in support of the course..

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ ١٥ اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	60	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب أسبوعيا	4
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	90	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب أسبوعيا	31
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	**150**		

Module Evaluation تقييم المادة الدراسية				
	Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**

Formative assessment	**Quizzes**	2	10% (10)	5 and 10	LO #1, #2 and #10, #11
	Assignments	2	10% (10)	2 and 12	LO #3, #4 and #6, #7
	Projects / Lab.	1	10% (10)	Continuous	All
	Report	1	10% (10)	13	LO #5, #8 and #10
Summative assessment	**Midterm Exam**	2hr	10% (10)	7	LO #1 - #7
	Final Exam	3hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus)

المنهاج الاسبوعي النظري

	Material Covered
Week 1	**Fundamental Concepts: Vectors**
Week 2	**Fundamental Concepts:** Position Vector of a Particle: Velocity and Acceleration in Rectangular Coordinates.
Week 3	**Fundamental Concepts:** Velocity and Acceleration in Plane Polar Coordinates.
Week 4	**Newtonian Mechanics: Rectilinear Motion of a Particle**
Week 5	**Newtonian Mechanics:** Newton's Law of Motion
Week 6	**Newtonian Mechanics:** Forces that Depend on Position: The Concepts of Kinetic and Potential Energy
Week 7	**Oscillations:** Linear Resoring Force: Harmonic Motion& Energy Considerations in Harmonic Motion
Week 8	**Oscillations:** Damped Harmonic Motion& Forced Harmonic Motion: Resonance.
Week 9	**General Motion of a Particle in Three Dimensions: :** The Potential Energy Function n Three-Dimensional Motion: The Del Operator.

Week 10	**General Motion of a Particle in Three Dimensions:** The Harmonic Oscillator in Two and Three Dimensions.
Week 11	**Noninertial Reference Systems:** Accelerated Coordinate Systems and Interial Forces& Rotating Coordinate Systems.
Week 12	**Noninertial Reference Systems:** Dynamics of a Particle in a Rotating Coordinate System.& Effects of Earth's Rotation
Week 13	**Gravitation and Central Forces:** Gravitational Force between a Uniform Sphere and a Particle
Week 14	**Gravitation and Central Forces:** Kepler's Laws& Potential Energy in a Gravitational Field
Week 15	**Exam**

Delivery Plan (Weekly Lab. Syllabus)

المنهاج الاسبوعي للمختبر

	Material Covered
Week 1	Lab 1: A) Measurement Principles and Errors B) Accurate Measurements
Week 2	Lab 2: Mathematical Pendulum
Week 3	Lab 3: Laws of Collision/Air Track
Week 4	Lab 4: Free Fall
Week 5	Lab 5: Hooke's Law
Week 6	Lab 6: Newton's Law
Week 7	Lab 7: Uniformly Accelerated Motion

Learning and Teaching Resources

مصادر التعلم والتدريس

	Text	**Available in the Library?**

Required Texts	Fundamentals of Physics by Halliday, Resnick & Walker 2001 John Wiley & Sons. Supplementary references	No
Recommended Texts	1- Physics for scientist and engineers with modern physics by Serway (1997), Saunders college publisher. 2- University Physics by Sears, Zemansky, and Young (1995).	No
Websites	https://www.coursera.org/browse/physical-science-and-engineering/electrical-engineering	

Grading Scheme

مخطط الدرجات

Group	Grade	التقدير	Marks %	Definition
Success Group (50 - 100)	**A -** Excellent	امتياز	90 - 100	Outstanding Performance
	B - Very Good	جيد جدا	80 - 89	Above average with some errors
	C - Good	جيد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	**FX –** Fail	راسب (قيد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required

Note: Marks Decimal places above or below 0.5 will be rounded to the higher or lower full mark (for example a mark of 54.5 will be rounded to 55, whereas a mark of 54.4 will be rounded to 54. The University has a policy NOT to condone "near-pass fails" so the only adjustment to marks awarded by the original marker(s) will be the automatic rounding outlined above.